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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,665	04/14/2004	Waichi Yamamura	12073-0006	4902

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EXAMINER	
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ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,665	YAMAMURA, WAICHI	
	Examiner	Art Unit	
	JASON L. LAZORCIK	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5 and 7-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5 and 7-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Applicant's reply dated April 13, 2009 amends claim 1, and cancels claims 2 and 3. All other claims stand as presented in the previous reply dated June 27, 2008. Claims 2, 3, 6, and 12 have been cancelled by Applicant, and no claims have been withdrawn from consideration. Claims 1, 4-5, and 7-11 are pending for prosecution on the merits.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1, 4-5, and 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Page 1, line 11 to Page 2, line 10) in view of Charles (3,275,470), Stookey (US 3,498,803), and Takahashi et al. (Japanese

Published Unexamined Patent Publication No. 10-226529; see English language translation).

Applicant's admitted prior art regarding the usual practice for forming glass rods

Applicant's specification teaches several key elements outlining the "usual practice" in the art of drawing optical fibers or "smaller-sized glass rods" from a glass rod or a "glass body having a cylindrical form" (also held equivalent to the claimed "glass preform" as per **Claim 10** or "glass ingot" as per **Claim 11**).

Applicant's specification specifically discloses that "the usual practice" in forming a smaller-sized glass rod from a glass matrix comprises;

1. "mechanically process a glass matrix into a perfectly round, cylindrical body by means of a cylindrical grinder"
2. After grinding, rinsing the cylindrical body with water and further subjecting said body "to chemical treatment such as with a hydrofluoric acid solution" or an aqueous solution of an alkali or acid (Japanese Laid-open Patent Application no. 58-217442)
3. "soften the body by application of heat", and
4. "elongate the softened body into a glass rod of high circularity"

The specification further teaches that it is known in the art that mechanical processing of a glass body as indicated above by means of a cylindrical grinder results in "surface roughness ... involving microcracks therein" or alternatively in "fixed grains on the surface thereof" as set forth in **claim 4**.

From Applicant's above disclosure, it is accepted by the Examiner that essentially every element of at least **claims 1, 4, 5, 10, and 11** are considered old and well known in the art to one of ordinary skill except for the step of "applying pressurized steam to surfaces of said glass body".

(I) Applicant's claimed steam treatment is obvious over Charles

The reference to Charles (3,275,470) teaches that it is advantageous to substitute or supplement the old and well known hydrofluoric acid solution treatment, with an aqueous steam treatment.

Similar to Applicant's admitted prior art process (see Step 2 above), Charles recognizes that it is conventional practice to immerse abraded glass rods into a hydrofluoric acid bath or "an aqueous solution of an acid" in order to etch away surface damage (Column 1, lines 19-43). Although the conventional solution treatment provides a measure of strengthening particularly where the bodies "are subjected to abrasion or other surface damage" (e.g. as would be expected in the grinding process of Step 1 above), Charles teaches that it is particularly advantageous to also treat the body in an atmosphere containing 80 percent to 100 percent saturated steam. The reference

indicates that providing such a treatment with steam in the temperature range between *about* 190°C to 260°C provides a substantial and enduring increase in the material strength (Column 21, Lines 29-64).

In view of the foregoing, it would have been an obvious matter for one of ordinary skill in the art at the time of the invention to substitute or supplement the old and well known acidic solution treatment with the steam treatment disclosed by Charles. Specifically, both the acid and steam treatments are recognized techniques for increasing the strength of an abraded glass body. The instant reference teaches that steam treatment yield a particularly advantageous strengthening results compared to the conventional acid solution treatment, however Charles recognizes that the steam treatment "does not remove the initial surface damage to the glass body" (Column 2, lines 49-52).

It follows that one of ordinary skill in the art would be motivated use the steam treatment in place of the conventional acid treatment since such a substitution has been expressly contemplated by Charles and has been shown to yield a predictable and beneficial strengthening of abraded glass bodies. Alternately, one would be motivated to utilize the Charles steam treatment in addition to the conventional acid since the conventional treatment is known to remove the initial surface damage to the glass body while the steam treatment yields an enduring increase in the material strength.

(II) Steam temperature range as recited in Claim 1 is encompassed by the temperature range disclosed by Charles

In the absence of any substantially unexpected results to the contrary, the applicants steam conditions of between 120 and 160°C are understood to be encompassed by the range of *about* 190°C to 260°C as set forth by the Charles process. Further, where Charles teaches a saturated steam vapor pressure (e.g. 100 percent saturated) and applicants claimed pressure range of 0.27 MPa to 0.63 MPa simply represents 100 percent saturated steam in the claimed temperature range of between 120°C to 160°C, said pressure range is deemed prima facia obvious over the Charles disclosure.

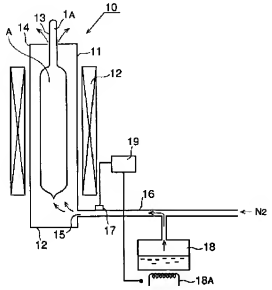
In summary, it would have been obvious to one of ordinary skill in the art at the time of the invention according to the Charles teachings to treat the surface roughened glass rod to an aqueous acid solution after cylindrical grinding in order to etch away the surface damage and to provide a nominal increase in the material strength. Further, it would have been obvious to one of ordinary skill to perform the steam treatment after the acid treatment in order to provide an enduring increase in the strength of the glass body. Both of these treatments would have been obvious modifications to the prior art teachings in order to decrease the risk of glass breakage during the drawing process as indicated in the conventional glass drawing operation.

(III) Applying steam by jetting against the glass body is obvious in view of Takahashi et al.

Now, although the process of applying a steam treatment to the surface of a fiber optic preform is deemed obvious for the reasons set forth above, the prior art of record is silent regarding application of the steam by "jetting against said glass body from at least one nozzle unit provided around said glass body" as presently claimed.

The reference to Takahashi et al. (Japanese Published Unexamined Patent Publication No. 10-226529; see English language translation) teaches (see ¶[0003-0004], ¶[0012-0013]) that dust adherent upon the exterior surface of optical fiber preforms can be incorporated into the optical fibers during the drawing operation. These incorporated dust particles decrease the strength of the optical fiber and result in an elevated probability that the fiber will break during drawing. In response to this recognized deficiency, Takahashi teaches a method for removing superficial dust on an optical fiber base material by treating the base material surface with steam. After receiving the steam treatment, the base material is heated to a softening point and drawn into a fiber in a "subsequent and separate step".

Regarding application of the steam, Takahashi teaches (see excerpt figure 1 below) that steam is applied to the surface of the glass body (A) by "jetting" through a fixed nozzle or gas introduction hole (15) which is provided around the glass body.



The use of the Takahashi treating arrangement would have represented an obvious choice for one of ordinary skill in the art seeking to apply the recommended steam treatment of Charles in glass body elongation method of Applicants admitted prior art. Such an apparatus would further be recognized an obvious choice for one of ordinary skill in the art seeking to reduce breakage of the optical fiber preform during a subsequent drawing operation.

(IV) Charles is silent regarding the "drying step by exposure to a flow of clean air"

As noted above, Charles explicitly teaches essentially every element of Applicants recited steam application process for treating a glass rod. With respect to Applicants amended claim language, Charles is silent regarding the noted "drying" step as recited in claim 1, line 9.

(V) The recited drying step would have been obvious in view of the United States patent to Stookey (US 3,498,803)

Stookey discloses a method for treating a glass article having a composition similar to that employed by Charles (see col. 3, line 5 to col. 4, line 3) wherein said glass article is exposed to a steam atmosphere in a temperature range of between about 80oC to 200oC (Col. 4, lines 29-31). The reference teaches that the atmosphere is preferably 50 to 100% by weight steam with the balance comprising a carrier gas of air or other inert gas (col. 4, lines 5-13) and that the atmosphere by be either "dry" or "wet" (e.g. saturated or unsaturated). After the treatment process, Stookey teaches that the flow of steam to the chamber is terminated and that the article is removed from the treatment chamber after the temperature is reduced to at or below 100oC (col. 4, lines 29-47).

It is the Examiner's assessment, in view of the foregoing, that Stookey either explicitly teaches drying the treated glass body in a stream of air or that such a step is rendered obvious over the Stookey teachings. That is, Stookey teaches the use of air as a carrier gas for the steam and Stookey explicitly teaches terminating the flow of steam to the chamber, however Stookey does not teach that the flow of the carrier gas to the chamber is terminated. Such a process is construed to read upon Applicants claimed step of "drying the cleaned glass body by exposure to a flow of clean air" as recited in claim 1, line 9.

Alternately, it would have been obvious for one of ordinary skill to maintain a flow of air to the chamber after terminating the flow of steam as a means to rapidly cool the chamber and the glass body to the targeted removal temperature of 100oC or below (Col. 4, lines 29-47).

It is incidentally noted that Stookey explicitly teaches steam conditions which read upon Applicant's preferred conditions as recited in claim 1, lines 5-7. Specifically from the Saturated Steam Tables; at a temperature of 120oC and 50-100% dryness, the steam pressure is 0.1985 MPa and for steam at a temperature of 180oC and 50-100% dryness, the steam pressure is 1.002 MPa. It therefore follows that where Stookey teaches a steam temperature range which encompasses Applicants claimed steam temperature range, namely 80oC to 200oC, and since Stookey teaches that the steam is preferably in the range of 50-100% dry, then Stookey teaches that it is known to apply steam at Applicant's recited steam conditions for surface treating of glass bodies, namely temperatures between 120 to 160oC and pressures from 0.27 to 0.63MPa. In view of the Stookey reference, it is evident that Applicant's preferred steam treatment conditions were known in the art at the time of the invention and that such conditions were shown effective for the surface treatment and strengthening of glass substrates.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Page 1, line 11 to Page 2, line 10) in view of Charles

(3,275,470), Stookey (US 3,498,803), and Takahashi et al. (Japanese Published Unexamined Patent Publication No. 10-226529; see English language translation) as applied to claim 1 under 35 USC §103(a) and in further view of the apparatus as taught by Brauer (6,715,317).

While the Takahashi reference discussed above teaches application of steam "by jetting against the glass body from at least one nozzle unit provided around the glass body, said reference is silent regarding the claimed apparatus to perform the steam treatment using a nozzle unit in the form of a ring as required by claim 7 or that the nozzle unit is movable as required by claim 8.

In view of the Takashi and Charles references, it is evident that the technique of applying steam to the surface of a glass rod prior to a subsequent drawing operation is known in the art. It is the Examiner's assessment, absent evidence of unexpected results to the contrary, that selection of an appropriate nozzle arrangement would reasonably fall within the purview of an engineer trained in the art of glass processing.

A gas/fluid nozzle arrangement complying with Applicant's claimed geometry and designated for treatment of a glass optical fiber preform is explicitly disclosed in the Brauer reference (see particularly figure 2).

Although preferred embodiments of the Brauer apparatus teach the use of nitrogen and helium gas as the applied fluid, the reference neither explicitly nor implicitly limits the composition of the gas applied to the glass surface. The reference further indicates (Column 4, Lines 58-63) that it is advantageous for the gas distribution to be movable along the longitudinal axis of the preform [Claim 8].

Brauer teaches that the disclosed gas applying nozzle arrangement is particularly beneficial in that it is capable of preventing deviations in the geometry of the glass body (col. 1, lines 41-43) during a subsequent drawing operation. It would have therefore been obvious to one of ordinary skill in the art at the time of the invention to employ the steam applying technique as taught by Takahashi with the structural details of the nozzle arrangement as taught by Brauer. Such a nozzle arrangement would have represented an obvious approach to achieve both the prior noted benefits of steam application while simultaneously minimizing oval deformation in the drawn body during a subsequent drawing operation.

Response to Arguments

Argument #1)

Applicant alleges that;

1) The starting glass bodies of Charles are not stated as being ground

2) Charles teaches formation of a corrosion product layer on the glass body however Charles does not teach a step of cleaning the glass body.

3) Charles does not teach a drying step.

Applicant summarizes by alleging that "Charles completely fails to teach a series of grinding, cleaning and drying steps" (see page 7). It is noted that all of the foregoing arguments are directed individually against the Charles reference even though the rejection is based upon the combination of Applicants own admission of the "usual practice" in view of the collective teachings of Charles, Stookey, and Takahashi et al..

To the extent that Applicant directs arguments individually against the Charles reference, Applicant is respectfully advised that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, the rejection is based upon the teachings of Charles and Takahashi in view of the conventional practice in the art as admitted by Applicant and as established at least on page 1, line 11 to page 2, line 10 of the originally filed Specification.

Argument #2)

Applicant alleges that the temperature range of steam employed in the Charles process, namely about 190oC to 260oC, is appreciably higher than Applicants. Applicant alleges (see page 7) the lower temperatures recited in the Applicants claims reduce costs compared to the relatively higher temperatures of Charles. Further, Applicant alleges that the lower temperature range of Charles, namely "about 190°C", should be narrowly interpreted and therefore does not read upon Applicants upper recited temperature of 160°C.

In response, Applicant's arguments on this matter have been carefully considered and it is the Examiner's assessment that the purported cost savings derived from a lower steam temperature could hardly be construed as an unexpected result. That is, one of ordinary skill in the art would be fully aware of the fact that lower operating temperatures lead to reduced utility costs, and such a benefit would not be construed as an unexpected result at the time of the invention. Further, Applicant has presented no reasoned basis to suggest that the lower temperature range of the Charles reference need be artificially constrained to the "narrow interpretation" by an exemplary embodiment of the Charles reference.

Further, the temperature of the steam employed in the glass treatment process would reasonably be viewed by a skilled technician as a process variable subject to routine experimentation and optimization. Absent compelling evidence of unexpected results, Applicants recited steam temperature is either encompassed by the prior art lower temperature range of "about 190oC" or alternately such a temperature range would have been derived through no more than routine process optimization over the prior art disclosed process. In view of the foregoing, the Examiner's position with respect to steam pressure and temperature stands as previously presented in the Official Action dated October 20, 2008.

The foregoing points notwithstanding, it is the Examiner's assessment that the reference to Stookey (US 3,498,803) cited in pertinent part for its teaching of drying a

steam treated glass substrate (Col. 4, lines 4-47) explicitly teaches Applicant's recited steam conditions. That is, Stookey explicitly teaches that Applicants recited steam temperature range, namely 80-200oC (col. 4, lines 29-34) with a relative humidity of up to 100% (col. 9, lines 41-43), is effective for treating analogous glass substrates (Col. 3, lines 6-col. 4, line 3) to those employed in the Charles reference.

Argument #3)

Regarding the Takashi reference, Applicant alleges that removal of dust as disclosed in the Takashi reference is completely different from the dust removal step in the recited invention. In support of this position, Applicant asserts that if the Takashi process were employed in the manner set forth in the prior Official Action "Applicant is unsure as to what would happen, but are fairly certain that no cleaning effect would occur".

Applicant's arguments on this matter have been considered but the instant allegations are unsupported by any evidence on the record. Since Applicant has provided no conclusive evidence in support of the instant allegations, it follows that said allegations are held to be mere conjecture and attorney argument.

The Official policy regarding Attorney argument is clearly outlined in MPEP §2145 [R-3];

> "Attorney argument is not evidence unless it is an admission, in which case, an examiner may use the admission in making a rejection. See MPEP § 2129 and § 2144.03 for a discussion of admissions as prior art. The arguments of counsel

cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness."). See MPEP § 716.01(c) for examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration.

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. LAZORCIK whose telephone number is

(571)272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason L Lazorcik/
Examiner, Art Unit 1791

/Eric Hug/
Primary Examiner, Art Unit 1791